Review Comments
Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report (November 19, 2010)
Portland, Oregon
ECSI Site #155
Dated April 2015

Submitted June 17, 2015

Following are the United States Environmental Protection Agency's (EPA) comments on the document entitled, Rhone-Poulenc Remedial Investigation Report: Addendum RI/SCE Report (November 19, 2010) [Addendum Report], dated April 2015 and prepared by the Oregon Department of Environmental Quality (DEQ). EPA understands DEQ prepared the Addendum Report to address remaining deficiencies in lieu of requiring StarLink Logistics LLC (StarLink) revise and resubmit the RI/SCE Report RP-Portland Site (RI/SCE Report) (AMEC 2010). DEQ intends that the Addendum Report, the RI/SCE Report, and the Draft Supplemental Section 8, Summary Chemical Nature and Extent and Fate and Transport (SS8) (Golder 2012) will represent and satisfy the requirement for a comprehensive Remedial Investigation Report as called for in the Consent Order for the site.

1. EPA requests the RI Addendum recognize uncertainties in the extent of groundwater contamination (particularly in the Gravel and Basalt hydrogeologic unit) as data gaps so the issue can be addressed during the feasibility study (FS), remedial design (RD) and/or implementation phase(s). EPA agrees with DEQ's revised Locality of Facility (LOF) for the Fill and Fine-Grained Alluvium and the Gravel and Basalt hydrogeological units (Figures 37 and 38) and DEQ's approach to use 1 percent effective solubility to estimate the extent of potential nonaqueous phase liquid (NAPL). The revised LOF maps highlight important uncertainties in the extent of groundwater contamination, particularly in the Gravel and Basalt hydrogeological unit underlying the Siltronics property.

2. Section 5 of the Addendum Report presents DEQ's conclusion on the source control pathway assessment based on their review of the RI/SCE Report and subsequent documents. EPA's comments on the DEQ's source control pathway assessment are:

    a. **Overwater Activities** – EPA agrees this pathway is not applicable for the Rhone Poulenc Site based on location.

    b. **Overland Transport/Sheet Flow** – EPA agrees overland transport/sheet flow from the Rhone Poulenc Site to the river does not occur, with the exception of historical drainage ditch (HDD).

Commented [dl1]: Could be addressed in response letter. [DEQ requests the EPA bring maps to explain the area they are concerned with for discussion.]

c. **NPDES Discharge** – EPA agrees the National Pollutant Discharge Elimination System (NPDES) permitted discharge from the Rhone Poulenc Site onsite treatment plan is not a significant source of contamination to the river and does not warrant additional source control evaluation or mitigation measures.

d. **Direct Groundwater Discharge to the River** – EPA does not agree with DEQ's conclusion that contaminants in groundwater do not pose a significant risk of recontamination to river sediment. As discussed in subsequent comments, further characterization of this pathway is needed prior to making this determination.

Commented [dl2]: We should discuss what the definition of "significant" is for EPA and DEQ so we are on the same page.

e. **Preferential Groundwater Pathway at City Outfall 22B** – EPA agrees this pathway and the performance of the Outfall 22B Interim Remedial Action Measure (IRAM) should be evaluated based on the results of ongoing performance monitoring.

f. **Preferential Groundwater Pathway via City Outfall 22C** – EPA agrees this pathway is not a significant source of contamination to the river.

g. **Preferential Groundwater Pathway via Saltzman Creek Outfall** – EPA agrees additional groundwater monitoring and dry weather flow monitoring in the stormwater system are needed to determine that the groundwater plume is stable and does not present a future risk to the Willamette River.

Commented [dl3]: Is EPA ok with the plan of FS monitoring?

h. **North Doane Lake Surface Water Discharge via City Outfall 22C** – EPA agrees discharge of surface water to the river via Outfall 22C does not appear to be a current significant source of contamination to the river.

i. **Historical Drainage Ditch (HDD)** – EPA agrees the stormwater pathway via the HDD does not pose a significant source of contamination to the river.

j. **Bank Erosion** – EPA agrees riverbank soil below the HDD discharge point and above the mean high water line are potential sources of contamination to the river via the bank erosion pathway. Rhone Poulenc should conduct additional sampling in this area to determine source control measures. Contaminated sediment below the mean high water line will be addressed as part of the in-water remedy.

Commented [dl4]: DEQ understands that area's needing bank work will be incorporated into the in water work.

k. **Site Stormwater Discharged via City Outfall 22B System** – EPA agrees overland flow from the Rhone Poulenc Site into the Outfall 22B storm system needed further monitoring and evaluation as part of the FS.

Commented [dl5]: DEQ determined it must be addressed, not monitored. We expect the area to be capped.

3. EPA does not support DEQ's conclusion that contaminants in groundwater associated with releases at the Rhone Poulenc Site do not pose a significant risk of recontamination to river sediment via direct groundwater discharge. DEQ's conclusions are based on their evaluation of a severely limited database that lacks synoptic and spatially comprehensive data over the entire site. The EPA has spelled out its concerns in recent comments. Additional data collection for complete characterization of the groundwater pathway from all Rhone Poulenc sources to the river should be performed as part of the FS evaluations. The conceptual site model (CSM)

Commented [dl6]: DEQ also based this on the low Koc's of COCs and the lack of current sediment contamination. – [DEQ will bring Koc's and sediment map to meeting.]

should be updated based on the additional data collected and used in the FS to develop remedial alternatives for source control.

4. EPA requests the uncertainty associated with the transport of DDx in the dissolved phase or via transport in NAPL be identified as a data gap in the RI Addendum so the issue can be addressed during the FS, RD, and/or implementation phase(s).

   DEQ concludes DDx constituents in groundwater may be discharging to the Willamette River via direct discharge, but DDx does not appear to be reaching the river at concentrations in groundwater above the 1 nanogram per liter (ng/L) screening level. DEQ bases this conclusion on maximum DDx constituent concentrations recorded in groundwater from the 2002 to 2010 data set. EPA believes this conclusion is premature based on uncertainty associated with the characterization of DDx sources and DDx plume extents. For example, the Addendum Report describes uncertainty of the source of the 4,4-DDT plume in the combined Gravel and Basalt hydrogeological unit, centered on RP-02-167, adjacent to the river (Figure 28j). Based on the concentration of Rhone Poulenc marker chemicals (1,2-DCB and Silvex) and 1,2-DCB concentrations at this location at levels of potential NAPL occurrence, it is likely Rhone Poulenc sources contributed to this deep 4,4-DDT plume. EPA recommends an alternate transport mechanism of 4,4-DDT being transported in NAPL along a deep flow path to the location of the plume should be considered in the CSM. DEQ's alternate CSM presents a much more extensive area of potential NAPL occurrence, and transport of DDx constituents in NAPL may be significant.

   EPA is concerned about the lack of DDx characterization within the deep groundwater pathway along the buried side channel under the Siltronics property. The transport of DDx constituents via dissolved phase or in NAPL is a possibly important data gap. As stated in EPA's recent comments, additional monitoring at wells completed within the area of the buried side channel (Figure 7) are needed to evaluate the potential migration of DDx and other Rhone Poulenc related chemicals of concerns in deep groundwater.

5. EPA requests that the potential cause of the notable decrease in 4,4-DDT concentrations between 2007 and 2009 be further evaluated in the FS. DEQ's observations regarding the decrease in 4,4-DDT concentrations in groundwater between 2007 and 2009 could be an important aspect of the fate and transport of this contaminant and should be used to inform the CSM. The Addendum Report speculates that the reduction in 4,4-DDT concentrations may be due to a change in sampling or analytical procedures or it could be due to degradation of 4,4-DDT. Review of changes in sampling methods should consider groundwater sampling records and particularly turbidity data if available. Impacts of changes in laboratory analytical procedures could be evaluated using laboratory reports to identify interferences, accuracy, precision, or other issues that might affect results. If the reduction in 4,4-DDT is attributed to degradation, then 4,4-DDE and 4,4-DDD results should be reviewed to determine if 4,4-DDT degradation products show an accompanying increase at the wells in question. Existing groundwater data on redox conditions also could become part of this evaluation. In the FS, the decrease in 4,4-DDT concentrations should be further evaluated, and reductions due to

Commented [dl7]: DDx not associated with NAPL.

Commented [dl8]: DDT not likely in NAPL.

Commented [dl9]: Let's review the available data and DDT chemical physical properties during our meeting. DEQ will bring figures.

Commented [dl10]: DEQ request EPA bring figure with proposed locations.

Commented [dl11]: What document is this Figure 7 from?

degradation should be evaluated for developing remedial alternatives and long-term monitoring program.

6. The stability of the 4,4-DDT plume in groundwater at the site should be further evaluated in the FS by additional data collection and by developing time versus 4,4-DDT concentration plots that incorporate existing and new groundwater results. It is unclear how DEQ arrived at the conclusion that 4,4-DDT concentrations in groundwater appear to be limited and stable based on the limited data set and the apparent changes in concentrations due to changed sampling methods, changed analytical methods, or degradation.

7. Additional groundwater monitoring should be conducted as part of the FS data collection to further evaluate lindane discharges to the river, assess plume stability, and, hence, determine the need for source control measures. DEQ concludes the Lindane plume extends to the near-river monitoring wells, but the concentrations are stable and not likely to discharge lindane to the river at concentrations exceeding risk-based screening levels. EPA is concerned about this interpretation since (1) existing monitoring wells may not be located in the proper strata (i.e., depth) to support this conclusion with confidence, and (2) the limited data set is not adequate to determine the lindane plume stability (see time concentration plots in Appendix H of Addendum Report).

8. The FS should include evaluation of the current groundwater flow direction and gradient magnitude with groundwater elevation contour maps and vertical gradient information corrected for tidal influence and changes in piezometric head over vertical intervals. The alternate CSM presented in the Addendum Report presents an alternative interpretation of the potentiometric surfaces and shows the approximate extent of the area where groundwater elevations are affected by tidal influence. The Addendum Report discusses how tidal influences and changes in piezometric head over vertical distances can affect interpretation of horizontal and hydraulic gradients; however, the report does not explain how groundwater elevations were corrected for these effects in their reinterpreted potentiometric maps (Figure 3 through Figure 6) and vertical gradient plots (Figures 17 and 18).

9. As part of additional data collection in the FS, data gaps related to the concentrations at which 1,2-DCB and other Rhone Poulenc-related chemicals of concerns discharge to the river should be evaluated for all potential groundwater discharge areas. The results of this evaluation should be used to determine source control requirements. DEQ used reconnaissance groundwater data offshore of the Siltronics and Gasco properties to demonstrate 1,2-DCB is present in groundwater within deep sediment underlying the river and in shallow sediment just below the mudline. This data is used to show a complete pathway from the deep groundwater plume to the Willamette River. DEQ concludes 1,2-DCB in deep groundwater is discharging to the river but not at concentrations above Joint Source Control Strategy Screening Level Values (JSCS SLVs). While informative, the evaluation is limited to reconnaissance borings at the distal end of the plume and does not apply to areas where higher concentrations of 1,2-DCB are present in groundwater within the Alluvial Colluvial Gravel, e.g., in boring RP-07-84 and the unexplored area between RP-07-84 and RP-11-216. As DEQ describes in Section 5.3 of the Addendum

Commented [dl12]: Additional monitoring will be required. DEQ request EPA provide additional guidance on how this information could be used in developing remedial alternatives.

Commented [dl13]: We can review the DDx data during the meeting. DEQ will bring figures.

Commented [dl14]: We can review the lindane data too. DEQ will bring figures.

Commented [dl15]: Discuss what data is needed and how it will be used in the FS or to inform extent

Report, Rhone Poulenc contaminants have been detected in transition zone water at concentrations exceeding ecological SLVs.

10. The 4,4-DDT Results in Groundwater – 2007 figure (Figure 28d) indicates a low level detection at well RP-11-216; however, this location is shown as non-detect in the comprehensive data maps (Figures 28h, 28i, and 28j). Detection of DDx constituents at RP-11-216 is significant in the groundwater CSM, and DEQ should incorporate it into the DDT extent maps and FS evaluation of DDx transport pathways in the buried channel and deep groundwater basin.

11. EPA requests fate and transport issues for DDx and polychlorinated dibenzo-p-dioxins and polychlorinated dibenzonfurans (PCDD/F) are similar, and both will need to be addressed when considering source control alternatives in the FS. EPA's recent comments on Rhone Poulenc RI/SCE and subsequent documents regarding PCDD/F were not specifically addressed by DEQ in the Addendum Report. EPA surmises many of the fate and transport issues associated with DDx also apply to PCDD/F. The previous RP-generated RI suggested PCDD/F contamination is exclusively from Arkema sources (or typical background). EPA has examined this issue previously and cannot support a conclusion that RP is no more than a minimal source of PCDD/F. For example, EPA's previous analysis of PCDD/F data using more appropriate ternary plots suggests three sources, which may reasonably include Arkema, RP, and "background."" Further, in sediments offshore and downstream of Outfall 22B, congener profiles of PCDD/F are not dominated by furans, a characteristic of releases from Arkema, and PCDD/Fare present at higher concentrations than are characteristic of anthropogenic background for Portland Harbor.

Commented [dl16]: Does the river sediment data suggest a discharge area associated with this gw plume.

Commented [dl17]: The low level detection was in RP-11-30 not RP-11-216. It appears to have been omitted from Figure 28i.

Commented [dl18]: Typo?

Commented [dl19]: Is this in regard to observed concentrations in River sediment? DEQ did not take a position on historical sources of dioxins in river sediment. DEQ did say that we do not agree that the footprint of 2,3,7,8-TCDD can be used to delineate the impacts of RP related contamination.